Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A flowbore fluid temperature control system comprising:

a control system body comprising a flowbore extending through the length of the control system body and comprising an inlet and an outlet such that all flowbore fluid entering the control system body inlet exits the control system outlet;

a valve mechanism within the control system body that controls the flow of flowbore fluid through the flowbore while maintaining the flowbore fluid in the control system body flowbore;

an actuator that adjusts the valve mechanism;

an operating system that operates the actuator and controls the flowbore fluid pressure; and

the temperature of the flowbore fluid being controlled by controlling the pressure drop of the flowbore fluid across the valve mechanism.

2. (original) The flowbore fluid temperature control system of claim 1 where the valve mechanism comprises a multi-position sleeve valve.

3. (previously presented) The flowbore fluid temperature control system of claim 1 where the valve mechanism comprises:

a valve sleeve within the flowbore forming an annulus between the outside of the valve sleeve and the inside of the control system body;

the valve sleeve comprising flow ports allowing fluid flow through the valve sleeve and into the annulus; and

a piston slidingly engaging the inside of the valve sleeve, the position of the piston within the valve sleeve controlling the fluid flow through the flow ports.

4. (original) The flowbore fluid temperature control system of claim 3 further comprising a seal preventing fluid flow across the seal between the outside of the piston and the inside of the valve sleeve.

5. (original) The flowbore fluid temperature control system of claim 3 where the valve sleeve further comprises an outer threaded portion that threadingly engages an inner threaded portion of the flowbore.

6. (original) The flowbore fluid temperature control system of claim 3 where the actuator further comprises a spring within the valve sleeve that interacts with the piston.

7. (original) The flowbore fluid temperature control system of claim 3 where the piston moves in a first direction with an increase in flowbore fluid pressure such that the force of the flowbore fluid pressure causes the piston to compress a spring.

8. (previously presented) The flowbore fluid temperature control system of claim 3 where:

the inside of the valve sleeve further comprises a circumferential groove that reciprocates between multiple first and second positions;

the piston further comprises a ratchet lug extending from the piston that travels within the groove;

the piston moves axially under a first load until the ratchet lug moves to one of the second positions, the ratchet lug rotating the piston as the ratchet lug travels to one of the second positions;

the piston moves axially under a second load until the ratchet lug moves to one of the first positions, the ratchet lug rotating the piston as the ratchet lug travels to one of the first positions;

the piston selectively moves between the first and second positions as the piston rotates within the valve sleeve; and

the position of the piston in the first and second positions allowing varying flow rates through the valve sleeve.

9. (original) The flowbore fluid temperature control system of claim 8 where flowbore fluid pressure provides the first load.

10. (previously presented) The flowbore fluid temperature control system of claim 8 where a spring that is compressed as the piston moves to the second positions provides the second load.

11. (previously presented) The flowbore fluid temperature control system of claim 8 where, once the piston is in one of the second positions, the valve mechanism maintains a selected fluid flow rate with an increase in the flowbore fluid pressure.

12. (original) The flowbore fluid temperature control system of claim 8 where a lock ring locks the piston in a selected second position.

13. (original) The flowbore fluid temperature control system of claim 1 where the operating system further comprises a fluid pump that controls the fluid pressure within the flowbore.

14. (original) The flowbore fluid temperature control system of claim 1 where the operating system operates the actuator mechanism to position the valve mechanism and selectively control the amount of fluid flow through the valve mechanism.

15. (original) The flowbore fluid temperature control system of claim 1 where the valve mechanism is selected from the group consisting of a poppet valve, an orifice, a reduced-diameter flow path, and a tortuous flow path.

16. (original) The flowbore fluid temperature control system of claim 1 where the valve mechanism comprises a single-position device adapted to create a flow restriction.

17. (original) The flowbore fluid temperature control system of claim 16 where the single-position device comprises a flow restrictor placed in the fluid flowbore selected from the group consisting of a ball, sleeve, and a bar.

18. (original) The flowbore fluid temperature control system of claim 1 where the actuator is selected from the group consisting of a mechanical actuator, an electrical actuator, and a hydraulic actuator.

19. (original) The flowbore fluid temperature control system of claim 1 were the operating system is selected from the group consisting of a mechanical system, a hydraulic system, an electrical system, and an acoustic system.

20. (original) The flowbore fluid temperature control system of claim 1 where the valve mechanism is a multi-position valve mechanism.

21. (original) The flowbore fluid temperature control system of claim 1 where the valve mechanism is a single-position valve mechanism.

22. (currently amended) A flowbore fluid temperature control system comprising:

a control system body comprising a flowbore extending through the length of the control system body and comprising an inlet and an outlet such that all flowbore fluid entering the control system body inlet exits the control system outlet;

a valve mechanism within the control system body that controls the flow of a flowbore fluid through the flowbore while maintaining the flowbore fluid in the control system body flowbore, the valve mechanism comprising:

a valve sleeve within the flowbore forming an annulus between the outside of the valve sleeve and the inside of the flowbore;

the valve sleeve comprising flow ports allowing fluid flow through the valve sleeve and into the annulus; and

a piston slidingly engaging the inside of the valve sleeve, the position of the piston within the valve sleeve controlling the fluid flow through the flow ports;

an actuator that adjusts the position of the piston within the valve sleeve;

an operating system that operates the actuator and controls the flowbore fluid pressure; and

the temperature of the flowbore fluid being controlled by controlling the pressure drop of the flowbore fluid across the valve mechanism.

23. (original) The flowbore fluid temperature control system of claim 22 further comprising a seal preventing fluid flow across the seal between the outside of the piston and the inside of the valve sleeve.

24. (original) The flowbore fluid temperature control system of claim 22 where the valve sleeve further comprises an outer threaded portion that threadingly engages an inner threaded portion of the flowbore.

25. (original) The flowbore fluid temperature control system of claim 22 where the actuator further comprises a spring within the valve sleeve that interacts with the piston.

26. (original) The flowbore fluid temperature control system of claim 22 where the piston moves in a first direction with an increase in flowbore fluid pressure such that the force of the flowbore fluid pressure causes the piston to compress a spring.

27. (previously presented) The flowbore fluid temperature control system of claim 22 where:

the inside of the valve sleeve further comprises a circumferential groove that reciprocates between multiple first and second positions;

the piston further comprises a ratchet lug extending from the piston that travels within the groove;

the piston moves axially under a first load until the ratchet lug moves to one of the second positions, the ratchet lug rotating the piston as the ratchet lug travels to the second position one of the second positions;

the piston moves axially under a second load until the ratchet lug moves to one of the first positions, the ratchet lug rotating the piston as the ratchet lug travels to one of the first positions;

the piston selectively moves between the first and second positions as the piston rotates within the valve sleeve; and

the position of the piston in the first and second positions allowing varying flow rates through the valve sleeve.

28. (original) The flowbore fluid temperature control system of claim 27 where flowbore fluid pressure provides the first load.

29. (previously presented) The flowbore fluid temperature control system of claim 27 where a spring that is compressed as the piston moves to the second positions provides the second load.

30. (previously presented) The flowbore fluid temperature control system of claim 27 where, once the piston is in one of the second positions, the valve mechanism maintains a selected fluid flow rate with an increase in the flowbore fluid pressure.

31. (original) The flowbore fluid temperature control system of claim 27 where a lock ring locks the piston in a selected second position.

32. (original) The flowbore fluid temperature control system of claim 22 where the operating system further comprises a fluid pump for controlling the fluid pressure within the flowbore.

33. (original) The flowbore fluid temperature control system of claim 22 where the operating system operates the actuator mechanism to selectively control the amount of fluid flow through the valve mechanism.

34. (canceled)

35. (canceled)

36. (canceled)

37. (original) The flowbore fluid temperature control system of claim 22 where the actuator is selected from the group consisting of a mechanical actuator, an electrical actuator, and a hydraulic actuator.

38. (original) The flowbore fluid temperature control system of claim 22 were the operating system is selected from the group consisting of a mechanical system, a hydraulic system, an electrical system, and an acoustic system.

39. (original) The flowbore fluid temperature control system of claim 22 where the valve mechanism is a multi-position valve mechanism.

40. (canceled)

41. (currently amended) A method of controlling the temperature of a flowbore fluid comprising:

flowing flowbore fluid through a control system body having a flowbore therethrough <u>comprising an inlet and an outlet such that all flowbore fluid entering the control system body inlet exits the control system outlet</u>;

selectively adjusting a valve mechanism in the flowbore with an actuator;

maintaining the flowbore fluid in the control system body flowbore as the fluid flows through the valve mechanism;

operating the actuator with an operating system; and

controlling the temperature of the flowbore fluid by controlling the pressure drop across the valve mechanism.

42. (original) The method of claim 41 where operating the actuator further comprises selectively adjusting the fluid pressure in the flowbore.

43. (previously presented) The method of claim 41 where the valve mechanism comprises a multi-position valve sleeve.

44. (previously presented) The method of claim 41 where selectively adjusting the valve mechanism comprises selectively positioning a piston within a valve sleeve to allow flowbore fluid to flow through selective ports in the valve sleeve.

45. (previously presented) The method of claim 44 further comprising interacting the piston with a spring.

46. (original) The method of claim 44 further comprising:

increasing the fluid flow through the valve sleeve by selectively increasing the flowbore fluid pressure to move the piston in a first direction in the valve sleeve, the piston opening flow ports in the valve sleeve and compressing a spring as the piston moves in the first direction; and

decreasing the fluid flow through the valve sleeve by selectively decreasing the flowbore fluid pressure to allow the spring to move the piston in a second direction in the valve sleeve, the piston closing flow ports in the valve sleeve as the piston moves in the second direction.

47. (previously presented) The method of claim 45 further comprising:

placing a ratchet lug extending from the piston within a circumferential groove on the inside of the valve sleeve, the groove reciprocating between multiple first and second positions around the inside of the valve sleeve; and

controlling the position of the piston by applying axial forces on the piston to move the lug within the groove, the movement of the lug causing the piston to move axially between the first and second positions as the piston rotates.

48. (original) The method of claim 47 further comprising applying axial forces on the piston to move the piston to a selected position, the position of the piston allowing a selected flow rate through the valve sleeve.

49. (original) The method of claim 48 comprising maintaining a selected flow rate through the valve sleeve and increasing the temperature of the flowbore fluid by increasing the fluid pressure of the flowbore fluid entering the valve sleeve.

50. (original) The method of claim 47 where the axial forces are caused by the fluid pressure in the flowbore in a first direction and the spring in a second direction.

51. (currently amended) A method of controlling the temperature of a flowbore fluid comprising:

flowing the flowbore fluid through a control system body having a flowbore therethrough comprising an inlet and an outlet such that all flowbore fluid entering the control system body inlet exits the control system outlet;

flowing the flowbore fluid through a valve sleeve having ports;

maintaining the flowbore fluid in the control system body flowbore as the fluid flows through the valve sleeve;

controlling the flow of the flowbore fluid through the flowbore by selectively positioning a piston within the valve sleeve to allow flowbore fluid to flow through selective ports in the valve sleeve; and

controlling the temperature of the flowbore fluid by controlling the pressure drop of the flowbore fluid across the valve sleeve.

52. (original) The method of claim 51 where selectively positioning the piston within the sleeve valve further comprises operating an actuator by selectively adjusting the fluid pressure in the flowbore.

53. (original) The method of claim 51 further comprising interacting the piston with a spring.

54. (original) The method of claim 51 further comprising:

increasing the fluid flow through the valve sleeve by selectively increasing the flowbore fluid pressure to move the piston in a first direction in the valve sleeve, the piston opening flow ports in the valve sleeve and compressing a spring as the piston moves in the first direction; and

decreasing the fluid flow through the valve sleeve by selectively decreasing the flowbore fluid pressure to allow the spring to move the piston in a second direction in the valve sleeve, the piston closing flow ports in the valve sleeve as the piston moves in the second direction.

55. (previously presented) The method of claim 53 further comprising:

placing a ratchet lug extending from the piston within a circumferential groove on the inside of the valve sleeve, the groove reciprocating between multiple first and second positions around the inside of the valve sleeve; and

positioning the piston by applying axial forces on the piston to move the lug within the groove, the movement of the lug causing the piston to move axially between the first and second positions as the piston rotates.

56. (original) The method of claim 55 further comprising applying axial forces on the piston to position the piston, the position of the piston allowing a selected flow rate through the valve sleeve.

57. (original) The method of claim 56 where the axial forces are caused by the fluid pressure in the flowbore in a first direction and the spring in a second direction.

58. (withdrawn) A method of controlling the fracture gradient of a formation comprising:

flowing flowbore fluid through a control system body having a flowbore therethrough;

flowing flowbore fluid through a valve mechanism in the flowbore while maintaining the flowbore fluid in the control system body;

adjusting the valve mechanism with an actuator;

operating the actuator with an operating system;

controlling the temperature of the flowbore fluid by controlling the pressure drop across the valve mechanism; and

controlling the fracture gradient of the formation by flowing the flowbore fluid from the control system body proximate to the formation.

59. (withdrawn) A method of drilling a well comprising:

drilling the well using a drill bit attached to a drill string;

flowing flowbore fluid through the drill string having a flowbore therethrough;

flowing flowbore fluid through a valve mechanism in the flowbore while maintaining the flowbore fluid in the drill string;

adjusting the valve mechanism with an actuator;

operating the actuator with an operating system;

controlling the temperature of the flowbore fluid by controlling the pressure drop across the valve mechanism; and

controlling the fracture gradient of the formation by flowing the flowbore fluid from the control system body proximate to the formation.